

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
31 July 2003 (31.07.2003)

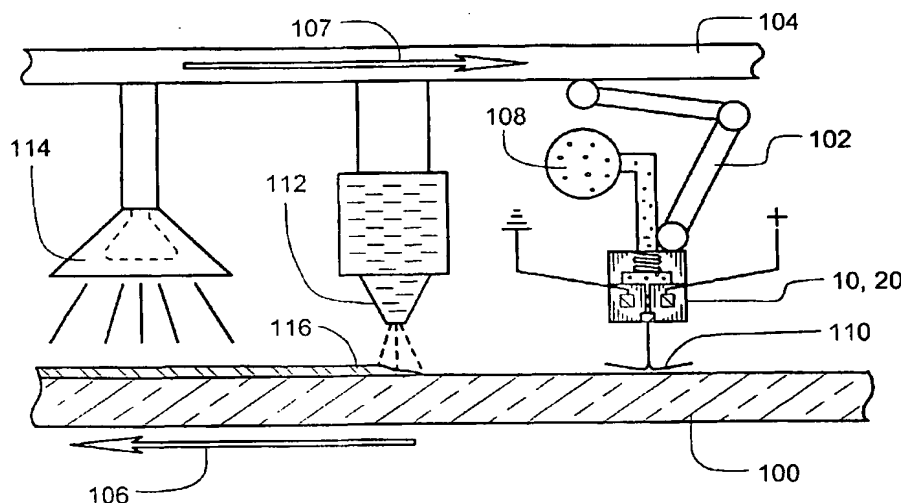
PCT

(10) International Publication Number
WO 03/062310 A1

- (51) International Patent Classification⁷: C08J 7/04, 85750 (US). YIALIZIS, Angelo [US/US]; 13680 N. Kachina Drive, Tucson, AZ 85737 (US).
7/18, C23C 14/02, 14/56, H05H 1/24
- (21) International Application Number: PCT/US03/02283 (74) Agent: ROST, Kyle; 5490 Autumn Court, Greenwood Village, CO 80111-3417 (US).
- (22) International Filing Date: 23 January 2003 (23.01.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 60/350,062 23 January 2002 (23.01.2002) US
- (71) Applicant (for all designated States except US): GLASSHIELD PATENT HOLDING COMPANY, LTD. [US/US]; 680 Atchison Way, Suite 400, Castlerock, CO 80104 (US).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- (72) Inventors; and
(75) Inventors/Applicants (for US only): MIKHAEL, Michael [US/US]; 3349 N. Manor Drive, Tucson, AZ

[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR APPLYING MATERIAL TO GLASS



(57) Abstract: A method of applying a polymer (116) to a glass surface (100) includes applying atmospheric plasma (110) to a glass surface (100), applying a film (116) of polymerizable fluid via spray apparatus (112) to the surface (100) and curing the film with high-energy radiation (114). Apparatus called a "plasma head" (10, 20) for applying atmospheric plasma (110) includes positive and ground electrodes, and a gas emitter strip of porous material with a plasma gas source (108) diffusing between the electrodes and through the emitter strip onto the glass surface. The substrate may be moved in direction (106) relative to the plasma, spray and radiation apparatus, or the apparatus be mounted on movable mount (104) and moved in direction (107), with positionable mechanism (102) attaching the plasma head.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US03/02283

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,276,741 B1 (CAMPFIELD et al) 21 August 2001 (21/08/01), see abstract; Figures 1-4; col. 12, line 58-col. 13, line 35 and claims 1-2, 7 and 14-15.	11
Y	US 6,106,659 A (SPENCE et al) 22 August 2000 (22/08/00), see abstract; col. 5, line 57-col. 6, lines 26 and 53-65; col. 7, lines 1-67; col. 8 line 26-col. 9, line 24; col. 10, line 50; col. 11, lines 30-67+; col. 13, line 20-col.14, line 67+, esp. lines 18-25 and 52-58; col. 15, lines 5-21; col.19., lines 25-29 and 40+; col. 22, line 26+; col. 23, lines 8-44; col. 24, line 1+; and col. 25, line 32-col. 26, line 8, plus Figures	1-3, 11-12, 15
Y	US 5,578,130 A (HAYASHI et al) 26 November 1996 (26/11/96), see the abstract; Figures 1 and 4; col. 8, lines 1-58 and col. 11, line 62-col. 12, line 17.	5-6, 12-17
Y	US 5,549,780 A (KOINUMA et al) 27 August 1996 (27/08/96), see the abstract; Figures 1-3 & 6-7; col. 1, lines 1-50; col. 2, lines 9-54 and 63-67; col. 5, lines 46-col. 6, line 50; col. 7, lines 1-8 and 62-col. 8, lines 34 and 56-col. 9, line 18; and col. 10, lines 1-26.	5-6, 12-17
Y,P	US 6,406,590 B1 (EBATA et al) 18 June 2002 (18/06/02), see the abstract; figures, esp. 9-10; col. 1, lines 10-20; summary; and col. 26, lines 38-50.	3-6 and 12-17
Y, E	US 6,525,481 B1 (KLIMA et al) 25 February 2003 (25/02/03), see the abstract; Figures, esp. 1 and 7; col. 2, lines 60-67+; col. 6, lines 1-25 and Ex. 1	3-6 and 12-17
Y	US 5,996,528 A (BERRIAN et al) 07 December 1999 (07/12/99), see the abstract; Figures; col. 1, lines 5-15 and 26-65; col. 3, lines 40-col. 4, line 49; col. 5, line 1-col. 6, line 67, esp. lines 60-67+; col. 7, lines 1-37 and 62-col. 8, line 4.	3-6 and 12-17
A	US 5,560,777 A (AHN) 01 October 1996 (01/10/96), see the abstract; Figures; col. 3, line 30-col. 4, lines 7 and 60-67.	3-6, 12-17
A	US 5,028,453 A (JEFFREY et al) 02 July 1991 (02/07/91), see the abstract; col. 1, line 44-col. 2, line 53.	1 and 11
Y	US 5,536,982 A (MWO et al) 16 July 1996 (16/07/96), see the abstract; summary; col. 3, lines 3-24 & 55-col. 4, line 32.	1 and 11
Y	US 5,376,400 A (GOLDBERG et al) 27 December 1994 (27/12/94), see the abstract; summary; col. 3, lines 50-68; col. 5, line 25 col. 6, line 46; col. 8, line 57 col. 9, line 15; col. 10, lines	1 and 11

BEST AVAILABLE COPY